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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 867,176	05 29 2001	Stephen C. Hazen	537-1049	6797

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EXAMINER

VALENTIN, JUAN D

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 05 15 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,176

Applicant(s)

HAZON ET AL.

Examiner

Juan D Valentin II

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Applicant's election with traverse of group II in Paper No. 5 is acknowledged. The traversal is on the ground(s) that claims 16 and 17 are not subcombinations usable together in a single combination. This is not found persuasive because claim 18 clearly shows the combination of the subcombination usable together between claims 16 and 17.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 11-16 & 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 5.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 5 & 7 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant does not reasonably provide enablement for (claim 5) "a first **test** array further comprising a **plurality of signal inputs**" or (claim 7) "the second **test** array comprises a **plurality of signal outputs**". Applicant

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has not provided proof as to how a plurality of **test** signal inputs or outputs are incorporated into the claimed first and second test arrays respectively. How is the plurality of signal inputs or outputs placed in conjunction with the optical switch array? Where is the plurality of signal inputs or outputs located on the input/output test arrays, respectively? Applicant provides enablement for a single **test** signal input and a single **test** signal output, but one of ordinary skill in the art would not be able to develop the claimed input test array containing a plurality of signal inputs or the claimed output test array containing a plurality of signal outputs from the Applicants disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 8, & 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (USPN '812 B1, hereinafter Lin) in view of Schroeder et al. (USPN '856 B1, hereinafter Schroeder).

Claim 1

Lin discloses in conjunction with Fig. 3, an optical switch (131) comprising a switching array of micromirrors (120) having a plurality of inputs (180) and a plurality of outputs (170).

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Lin discloses the micromirrors of the switching array each having first and second positions (col. 3, lines 43-67).

Lin substantially teaches the claimed invention except that it fails to show a first test array of mirrors having a test input and a plurality of outputs, the first test array enabling a test signal to be routed to mirrors of the switching array. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a first test array (50) with a test input (56) and a plurality of outputs (col. 6, lines 21-57) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Lin for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Lin substantially teaches the claimed invention except that it fails to show a second test array of mirrors having a test output, the test input of the first test array being routed to the test output when the mirror being tested is in one of the first and second positions. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a second test array (60) having a test output (57) (col. 10, lines 1-27) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Lin for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Claim 2

Lin in view of Schroeder discloses an optical switch wherein the outputs of the first test array are aligned optically with the inputs to the switching array (Schroeder, Fig. 2A). Applicant

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will be appreciated that the outputs of the test array are optically aligned with the inputs of the switching array. Therefore, the ref. of Lin in view of Schroeder reads on the claimed limitation.

Claim 3

Lin in view of Schroeder discloses the first and second test arrays are formed on the same substrate as the switching array (Schroeder, Fig. 2A, col. 4, line 51-col. 5, line 7).

Claim 4

Given the combination of Lin in view of Schroeder it would be obvious to one of ordinary skill in the art at the time of the claimed invention to form the first test array from mirrors of the switching array of Shroeder. Lin in view of Schroeder further discloses double-sided mirrors (Lin, col. 3, lines 43-55) and further discloses the first test array enabling a test signal to be routed to the remaining mirrors of the switching array (Schroeder, col. 10, lines 1-4).

Claim 6

Lin in view of Schroeder further discloses wherein the first (50) and second (60) test arrays are arranged on adjacent sides of the switching array (Schroeder, Fig. 2A).

Claim 8

Lin in view of Schroeder discloses the claimed invention except for first and second test arrays are arranged on opposite sides of the switching array. It would have been obvious to one having ordinary skill in the art at the time the invention was made to place first and second test arrays on opposite sides of the optical switch array, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art.

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Claim 17

Lin discloses in conjunction with Fig. 3, an optical switch (131) comprising a switching array of micromirrors (120) having a plurality of inputs (180) and a plurality of outputs (170).

Lin discloses the micromirrors of the switching array each having first and second positions (col. 3, lines 43-67).

Lin substantially teaches the claimed invention except that it fails to show a test array of mirrors having a number of inputs connected to or optically aligned with the outputs of the switching array, and a test output. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a test array (60) having a number of inputs connected to or optically aligned with the outputs of the switching array, and a test output (57) (col. 10, lines 1-27) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Schroeder for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

3. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Schroeder and further in view of Graves et al. (USPAPN '2002/0012143 A1, hereinafter Graves).

Claim 9

Lin discloses in conjunction with Fig. 3, an optical switch (131) comprising a switching array of micromirrors (120) having a plurality of inputs (180) and a plurality of outputs (170).

Lin discloses the micromirrors of the switching array each having first and second positions (col. 3, lines 43-67).

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Lin substantially teaches the claimed invention except that it fails to show a first test array of mirrors having a test input and a plurality of outputs, the first test array enabling a test signal to be routed to mirrors of the switching array. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a first test array (50) with a test input (56) and a plurality of outputs (col. 6, lines 21-57) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Lin for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Lin substantially teaches the claimed invention except that it fails to show a second test array of mirrors having a test output, the test input of the first test array being routed to the test output when the mirror being tested is in one of the first and second positions. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a second test array (60) having a test output (57) (col. 10, lines 1-27) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Lin for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Lin in view of Schroeder substantially teaches the claimed invention except that it fails to show an input micromirror array having a combined test input and a plurality of outputs, each output being aligned optically with an input to the first test array of a respective one of the optical switches, thereby enabling the combined test input to be routed to the first test array of each optical switch and an output micromirror array having a plurality of inputs from the second test arrays of each optical switch and a combined test output. Graves in conjunction with Fig. 3,

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shows that it is known to provide an input micromirror array (130A) having a combined test input (110A) and a plurality of outputs (270), each output being aligned optically with an input to the first test array of a respective one of the optical switches (210A-M) and an output micromirror array (140A) having a plurality of inputs (260) from the second test arrays of each optical switch and a combined test output (120A) for an optical switch with connection verification. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin in view of Schroeder with the test signal input and output arrays of Graves for the purposes of providing connection verification within an optical switching system.

All though the WDD/WDM devices of Graves does not disclose input/output mirror arrays, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to replace the WDD/WDM devices of Graves with MEMS micromirrors arrays for simply steering a test signal to a plurality of optical switches in order to provide connection verification within an optical switching system without the need of complex WDD/WDM devices. Therefore, it is the position of the Office, the ref. of Lin in view of Schroeder and further in view of Graves reads on the Applicants claimed limitations.

4. Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Schroeder and further in view of Riza (USPN '954 B1).

Claim 10

Lin discloses in conjunction with Fig. 3, an optical switch (131) comprising a switching array of micromirrors (120) having a plurality of inputs (180) and a plurality of outputs (170).

Lin discloses the micromirrors of the switching array each having first and second positions (col. 3, lines 43-67).

Lin substantially teaches the claimed invention except that it fails to show a first test array of mirrors having a test input and a plurality of outputs, the first test array enabling a test signal to be routed to mirrors of the switching array. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a first test array (50) with a test input (56) and a plurality of outputs (col. 6, lines 21-57) for an optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Lin for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Lin substantially teaches the claimed invention except that it fails to show a second test array of mirrors having a test output, the test input of the first test array being routed to the test output when the mirror being tested is in one of the first and second positions. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a second test array (60) having a test output (57) (col. 10, lines 1-27) for an optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the first test array of Lin for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

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Lin in view of Schroeder substantially teaches the claimed invention except that it fails to show a demultiplexing unit to receive a group of WDM channels on individual optical fibers and a multiplexing unit having as inputs the outputs of the optical switch, the multiplexing unit combining the individual channels into a single WDM signal on an individual optical fiber. Riza in conjunction with Fig. 4, shows that it is known to provide a demultiplexing unit (25) to receive a group of WDM channels on individual optical fibers (SMF) and a multiplexing unit (25) having as inputs the outputs of the optical switch, the multiplexing unit combining the individual channels into a single WDM signal (IN 2) on an individual optical fiber (col. 6, lines 1-23) for an WDM optical communications network. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin in view of Schroeder with the demultiplexing/multiplexing device of Riza for the purposes of providing signal testing within an optical switch of a WDM device.

5. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Schroeder and further in view of Schroeder (USPN '995 B1).

Claim 18

Lin discloses in conjunction with Fig. 3, an optical switch (131) comprising a switching array of micromirrors (120) having a plurality of inputs (180) and a plurality of outputs (170). Lin discloses the micromirrors of the switching array each having first and second positions (col. 3, lines 43-67).

Lin substantially teaches the claimed invention except that it fails to show a test array of mirrors having a test input and a plurality of outputs, the test array enabling a test signal to be routed to mirrors of the switching array. Schroeder in conjunction with Fig. 2A, shows that it is

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known to provide a test array (50) of mirrors having a test input and a plurality of outputs the test array enabling a test signal (52) to be routed to mirrors of the switching array (11) (col. 10, lines 28-45) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the test array of Schroeder for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Lin substantially teaches the claimed invention except that it fails to show a test array of mirrors having a number of inputs connected to or optically aligned with the outputs of the switching array, and a test output. Schroeder in conjunction with Fig. 2A, shows that it is known to provide a test array (60) having a number of inputs connected to or optically aligned with the outputs of the switching array (11) and a test output (57) (col. 10, lines 1-27) for a optical switching matrix. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin with the test array of Schroeder for the purposes of providing testing, calibration, and monitoring of each optical switch point (Schroeder, abstract).

Lin in view of Schroeder substantially teaches the claimed invention except that it fails to show an optical network comprising at least two nodes each including at least one optical switch. Schroeder ('995) in conjunction with Fig. 4, shows that it is known to provide an at least two (68 & 70) nodes each comprising an optical switch (68 & 70) (col. 5, line 62-col. 6, line 57) for an interconnectivity port in a multistage optical switch. It would have been obvious to someone of ordinary skill in the art to combine the device of Lin in view of Schroeder with the multistage switch of Schroeder ('995) for the purposes of providing providing testing, calibration, and monitoring of each optical switch point within the multistage optical switch.

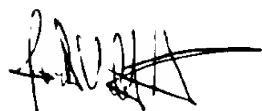
It is obvious and well known to someone of ordinary skill in the art that given the disclosure of Lin in view of Schroeder and further in view of Schroeder ('995), that a test signal can be provided at the test input of the first node and a monitoring arrangement is provided for monitoring the signal at the test output of the second node. Therefore, it is the position of the Office, that the reference of Lin in view of Schroeder and further in view of Schroeder ('995) reads on the Applicants claimed limitations.

Conclusion

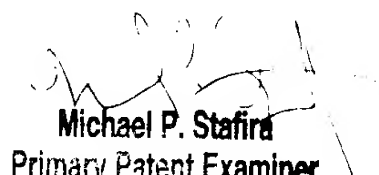
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan D Valentin II whose telephone number is (703) 605-4226. The examiner can normally be reached on M-Th., Every other Fr..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (703) 308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308- 0955.



Juan D Valentin II
Examiner 2877
JDV
May 9, 2003



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